

FIRST RECORD OF *SOLIDAGO* × *SNARSKISII* (ASTERACEAE) IN POLAND
Artur PLISZKO

Jagiellonian University in Kraków, Institute of Botany, Department of Taxonomy, Phytogeography and Palaeobotany, Gronostajowa 3, PL-30-387 Kraków, Poland

E-mail: artur.pliszko@uj.edu.pl

Abstract

 Pliszko A., 2018: First record of *Solidago* × *snarskisia* (Asteraceae) in Poland. – *Botanica*, 24(2): 211–213.

The paper deals with *Solidago* × *snarskisia*, a natural hybrid between the North American *S. gigantea* and the European *S. virgaurea*, as a new casual alien species to the flora of Poland. It was found in August 2018 in the town of Suwałki, NE Poland, growing on a fallow land among its parental species. The population of the hybrid consisted of one cluster of shoots, including four generative and three vegetative shoots, and it was associated with meadow, grassland, and ruderal plant species. The locality of *S. ×snarskisia* in Poland was mapped using the ATPOL cartogram method.

Keywords: alien species, biological recording, distribution, Europe, hybrid, *Solidago gigantea*, *Solidago virgaurea*.

The genus *Solidago* L. (Asteraceae) is native to North America, South America and Eurasia, and comprises about 131 species (SEMPLE, 2018). Moreover, it includes a number of interspecific hybrids occurring within the ranges of their parental species (NESOM, 1994; SEMPLE & COOK, 2006; SEMPLE, 2016). In Europe, two North American species *Solidago canadensis* L. and *S. gigantea* Aiton hybridize with the native *S. virgaurea* L. giving the hybrids *S. ×niederederi* Khek and *S. ×snarskisia* Gudžinskas & Žalneravičius, respectively. *Solidago ×niederederi* was reported from Austria in 1905 (PLISZKO, 2015 and literature cited therein) and *S. ×snarskisia* was reported from Lithuania in 2016 (GUDŽINSKAS & ŽALNERAVIČIUS, 2016). Both hybrids should be treated as alien species in Europe (PLISZKO, 2013, 2015; GUDŽINSKAS & ŽALNERAVIČIUS, 2016), considering the concept proposed by PYŠEK et al. (2004), and their geographical distribution is insufficiently recognized. The presence of *S. ×niederederi* has been confirmed in Austria, the United Kingdom, Italy, Denmark, Sweden, Norway, Germany, Poland, Lithuania,

Latvia, and Russia (PLISZKO et al., 2017; JAŻWA et al., 2018 and literature cited therein), whereas *S. ×snarskisia* has been recorded only from Lithuania so far (GUDŽINSKAS & ŽALNERAVIČIUS, 2016).

Solidago ×niederederi and *S. ×snarskisia* are perennial plants of intermediate morphology between their parental species (PLISZKO, 2013, 2015; GUDŽINSKAS & ŽALNERAVIČIUS, 2016; KARPAVIČIENĖ & RADUŠIENĖ, 2016). They belong to *Solidago* sect. *Solidago* nothosubsect. *Triplidago* Gudžinskas & Žalneravičius, which is characterized by the formation of pseudorosettes on the apices of vegetative shoots (GUDŽINSKAS & ŽALNERAVIČIUS, 2016). In contrast to *S. ×niederederi*, there is a lack of information indicating that *S. ×snarskisia* produces viable seeds (GUDŽINSKAS & ŽALNERAVIČIUS, 2016; PLISZKO & KOSTRAKIEWICZ-GIERALT, 2017). However, it forms short and long rhizomes similar to those of *S. gigantea* and, therefore, may persist and spread in the wild by vegetative reproduction (GUDŽINSKAS & ŽALNERAVIČIUS, 2016).

In this paper, the first record of *S. ×snarskisia* in

Poland was presented. The identity of the hybrid was confirmed using the morphological characters provided by GUDŽINSKAS & ŽALNERAVIČIUS (2016). The locality of the hybrid was mapped according to the ATPOL cartogram method (ZAJĄC, 1978). The voucher specimens of the hybrid are deposited at the Herbarium of the Institute of Botany of the Jagiellonian University in Kraków (KRA).

The first stand of *S. ×snarskisia* in Poland was discovered on 4 August 2018 in the town of Suwałki, the north-eastern part of the country (GPS coordinates: 54°07.393' N/22°57.110' E; altitude: 181 m a.s.l.). This locality is situated within the unit FB08 of the ATPOL cartogram grid (Fig. 1), where the two capital letters indicate a square of 100 km side and the two numbers indicate a square of 10 km side.

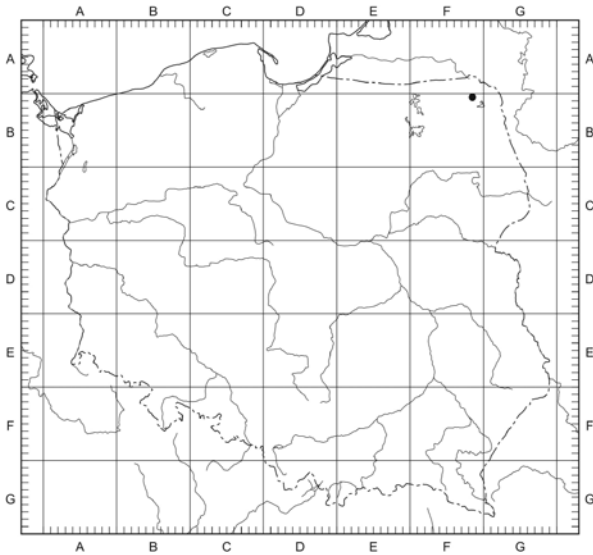


Fig. 1. First locality of *Solidago ×snarskisia* recorded in Poland, using the ATPOL cartogram method (ZAJĄC, 1978)

One cluster of shoots of the hybrid (presumably a single clone) was found growing on a fallow land among its parental species. The cluster consisted of four generative and three vegetative shoots (ramets). It was associated with meadow, grassland and ruderal species such as *Arrhenatherum elatius* (L.) P.Beauv. ex J.Presl & C.Presl, *Dactylis glomerata* L., *Galium verum* L., *Vicia cracca* L., *Medicago falcata* L., *Pimpinella saxifraga* L., *Thymus pulegioides* L., *Artemisia absinthium* L., *Daucus carota* L., *Erigeron annuus* (L.) Desf., *Picris hieracioides* L., and *Rumex thyrsoiflorus* Fingerh. A low number of shoots of the

hybrid suggests that most likely it arose two or three years ago. Due to the short time of observation, currently, *S. ×snarskisia* should be classified as a casual alien in the flora of Poland. However, the ability of vegetative reproduction of *S. ×snarskisia* may facilitate its naturalization in the future as suggested by GUDŽINSKAS & ŽALNERAVIČIUS (2016). Moreover, it should be pointed out that *S. gigantea* and *S. virgaurea* are widely distributed in Poland (ZAJĄC & ZAJĄC, 2001) and often occur in a close proximity, therefore, their hybrids may be more common than it is currently known. Further field studies are needed to clarify the geographical-historical status and distribution of *S. ×snarskisia* in Poland as well as in other European countries.

ACKNOWLEDGMENTS

The study was financially supported by the Institute of Botany of the Jagiellonian University in Kraków (K/ZDS/007344).

REFERENCES

- GUDŽINSKAS Z., ŽALNERAVIČIUS E., 2016: *Solidago ×snarskisia* nothospec. nov. (Asteraceae) from Lithuania and its position in the infrageneric classification of the genus. – *Phytotaxa*, 253(2): 147–155.
- JAŻWA M., JĘDRZEJCZAK E., KLICHOWSKA E., PLISZKO A., 2018: Predicting the potential distribution area of *Solidago ×niederederi* (Asteraceae). – *Turkish Journal of Botany*, 42(1): 51–56.
- KARPAVIČIENĖ B., RADUŠIENĖ J., 2016: Morphological and anatomical characterization of *Solidago ×niederederi* and other sympatric *Solidago* species. *Weed Science*, 64(1): 61–70.
- NESOM G.L., 1994: Hybridization in the tribe Astereae (Asteraceae). – *Phytologia*, 77(3): 298–307.
- PLISZKO A., 2013: A new locality of *Solidago ×niederederi* Khek (Asteraceae) in Poland. – *Biodiversity Research and Conservation*, 29: 57–62.
- PLISZKO A., 2015: Neotypification of *Solidago ×niederederi* (Asteraceae). – *Phytotaxa*, 230(3): 297–298.
- PLISZKO A., KOSTRAKIEWICZ-GIERAŁT K., 2017: Resolving the naturalization strategy of *Solidago*

- ×*niederederi* (Asteraceae) by the production of sexual ramets and seedlings. – *Plant Ecology*, 218(11–12): 1243–1253.
- PLISZKO A., ŁAZARSKI G., KALINOWSKI P., ADAMOWSKI W., RUTKOWSKI L., PUCHAŁKA R., 2017: An updated distribution of *Solidago ×niederederi* (Asteraceae) in Poland. – *Acta Musei Silesiae Scientiae Naturales*, 66(3): 253–258.
- PYŠEK P., RICHARDSON D.H., REJMÁNEK M., WEBSTER G.L., WILLIAMSON M., KIRSCHNER J., 2004: Alien plants in checklists and floras: towards better communication between taxonomists and ecologists. – *Taxon*, 53(1): 131–143.
- SEMPLE J.C., 2016: Documenting a *Solidago bicolor* × *S. brendiae* hybrid (Asteraceae: Astereae) from Nova Scotia. – *Phytoneuron*, 23: 1–10.
- SEMPLE J.C., 2018: *Solidago*. <https://uwaterloo.ca/astereae-lab/research/goldenrods> [Accessed 03-09-2018].
- SEMPLE J.C., COOK R.E., 2006: *Solidago* L. – In: Flora North America Editorial Committee (eds), *Flora of North America North of Mexico*, 20(2): 107–166. – Oxford.
- ZAJĄC A., 1978: Atlas of distribution of vascular plants in Poland (ATPOL). – *Taxon*, 27(5–6): 481–484.
- ZAJĄC A., ZAJĄC M. (eds), 2001: *Distribution atlas of vascular plants in Poland*. – Kraków.

PIRMA *SOLIDAGO* × *SNARSKISII* (ASTERACEAE) RADAVIETĖ LENKIJOJE

Artur PLISZKO

Santrauka

Straipsnyje aprašoma naujo Lenkijos florai *Solidago × snarskii*, natūralaus hibrido tarp *S. gigantea* iš Šiaurės Amerikos kilusios ir vietinės *S. virgaurea* rūšies, radavietė. Augalas buvo rastas 2018 m. rugpjūčio mėn. Suvalkuose pūdyje kartu su tėvinėmis ir

kitomis pievinėmis ir ruderalinėmis rūšimis. Hibrido populiaciją sudarė viena stiebų grupė iš keturių genratyvinių ir trijų vegetatyvinių ūglių. *S. × snarskii* radimo vieta Lenkijoje buvo kartografiuota naudojant ATPOL metodą.